

AMENDED PAGE

Claims

1. Water-soluble copolymers of
 - a) monoethylenically unsaturated, acid-group-containing monomers and
 - b) at least one of the following copolymerizable hydrophobic components that contains an unsaturated double bond
 - b1) an acyclic, monocyclic and/or bicyclic terpene
 - b2) an unsaturated, open-chain or cyclic, normal or isomeric hydrocarbon with 8 to 30 carbon atoms
 - b3) an unsaturated fatty alcohol with respectively 8 to 30 carbon atoms and its esters or amides with saturated aliphatic alcohols, amines and acids,characterized in that the copolymers are formed by radical copolymerization of components a) and b) in the aqueous phase.
2. Copolymers according to claim 1, characterized in that the monoethylenically unsaturated, acid-group-containing monomers are composed of monoethylenically unsaturated monocarboxylic acids.
3. Copolymers according to claim 1 and 2, characterized in that the acid-group-containing monomers are chosen from the group comprising acrylic acid, methacrylic acid and/or vinylacetic acid.
4. Copolymers according to claim 1 to 3, characterized in that the monoethylenically unsaturated, acid-group-containing monomers are composed of monoethylenically unsaturated monocarboxylic acids and monoethylenically unsaturated sulfonic acids.
5. Copolymers according to claim 1 to 4, characterized in that the acid groups in the monomers are neutralized in a proportion of 1 to 75%.
6. Copolymers according to claim 1 to 5, characterized in that the acid groups in the monomers are neutralized in a proportion of 5 to 30%.

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7. Copolymers according to claim 1 to 6, characterized in that the copolymerizable component is an acyclic terpene and/or a monocyclic and/or bicyclic terpene hydrocarbon.
8. Copolymers according to claim 1 to 7, characterized in that the proportion of component b) ranges from 0.001 to 50 wt%.
9. Copolymers according to claim 8, characterized in that the proportion of component b) ranges from 0.01 to 30 wt%.
10. Copolymers according to claim 1 to 9, characterized in that they contain up to 40 wt% of acid-group-free, water-soluble monomers c).
11. Copolymers according to claim 1 to 10, characterized in that they have a weight-average molecular weight of smaller than or equal to 500,000 g/mol.
12. Copolymers according to claim 11, characterized in that they have a weight-average molecular weight of between 1,000 and 10,000 g/mol.
13. A method for synthesis of a water-soluble copolymer according to claim 1 to 12, characterized in that the copolymers are formed by radical polymerization of the monomer components in the aqueous phase.
14. A method according to claim 13, characterized in that the concentration of the copolymerizable constituents in the aqueous polymerization mixture is 10 to 70 wt%.
15. A method according to claim 13 or 14, characterized in that the component b) is used in the form of an oil-in-water emulsion, which is formed from a hydrophobic phase (oil phase), at least one emulsifier and water.
16. A method according to claim 13 to 15, characterized in that the radical polymerization is carried out in the presence of molecular-weight regulators.

17. The use of the copolymers according to claim 1 to 12 to prevent organic, inorganic and mixed organic/inorganic deposits in water-conveying systems.

18. The use of the copolymers according to claim 17 in service water or wastewater systems, in cooling loops, in seawater desalination plants, in reverse osmosis systems, and for conditioning of brackish water and in the recovery of sugar from sugar beet, especially for treatment of aqueous suspensions containing chopped sugar beet.

19. The use of the copolymers according to claim 18 in the recovery of sugar from sugar beet for treatment of aqueous suspensions containing chopped sugar beet.

20. The use of the copolymers according to claim 17 to 19, characterized in that the copolymers are added to the water-conveying system in a proportion of 0.1 to 5000 ppm.

21. The use of the copolymers according to claim 20, characterized in that the copolymers are added to the water-conveying system in a proportion of 1 to 100 ppm.

22. The use of the copolymers according to claim 1 to 12 as auxiliary agents in the grinding and dispersing of pigments.

23. The use of the copolymers according to claim 1 to 12 as auxiliary agents in cleaning-agent and washing-agent formulations as well as in textile-treatment and leather-treatment processes.